W. Bodenstein

GENERAL ELECTRIC LABORATORY LIBRARY

GENERAL ELECTRIC

General Engineering and Consulting Laboratory

INSTRUCTION BOOK GEI 2739I

FOR TRIP SURGE GENERATOR
CAT.NO. 9I59534GI

AND TRIP CIRCUIT UNIT
CAT.NO.9I59535GI

700,000.00

1000.000

SCHENECTADY, NEW YORK

1000,000

APJ-6

INSTRUCTION BOOK GEI-27391

FOR TRIP SURGE GENERATOR, CAT. NO. 9159534G1

AND TRIP CIRCUIT UNIT, CAT. NO. 9159535G1

GENERAL ELECTRIC CO.

SCHENECTADY, N. Y.

November, 1948

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

INSTRUCTION BOOK GEI-27391

FOR TRIP SURGE GENERATOR CAT. NO. 9159534G1

AND TRIP CIRCUIT UNIT, CAT. NO. 9159535G1

The purpose of this equipment is to produce a sharp negative pulse of about 62 KV for tripping a large surge generator. Photograph No. 1054619 shows the complete outfit and photograph No. 1054620 the trip circuit part without its cover. It is designed for use with a cathode ray oscillograph of the HC-25 series.

The diagram M-5112535 shows the connections. The trip circuit unit contains a high voltage hydrogen filled thyratron, a rectifier, power transformer and filament transformers. The power transformer is supplied thru a separate receptacle so that it may be interlocked with the power supplied to the main surge generator. The time delay relay holds off power for five minutes to give the thyratron time to heat.

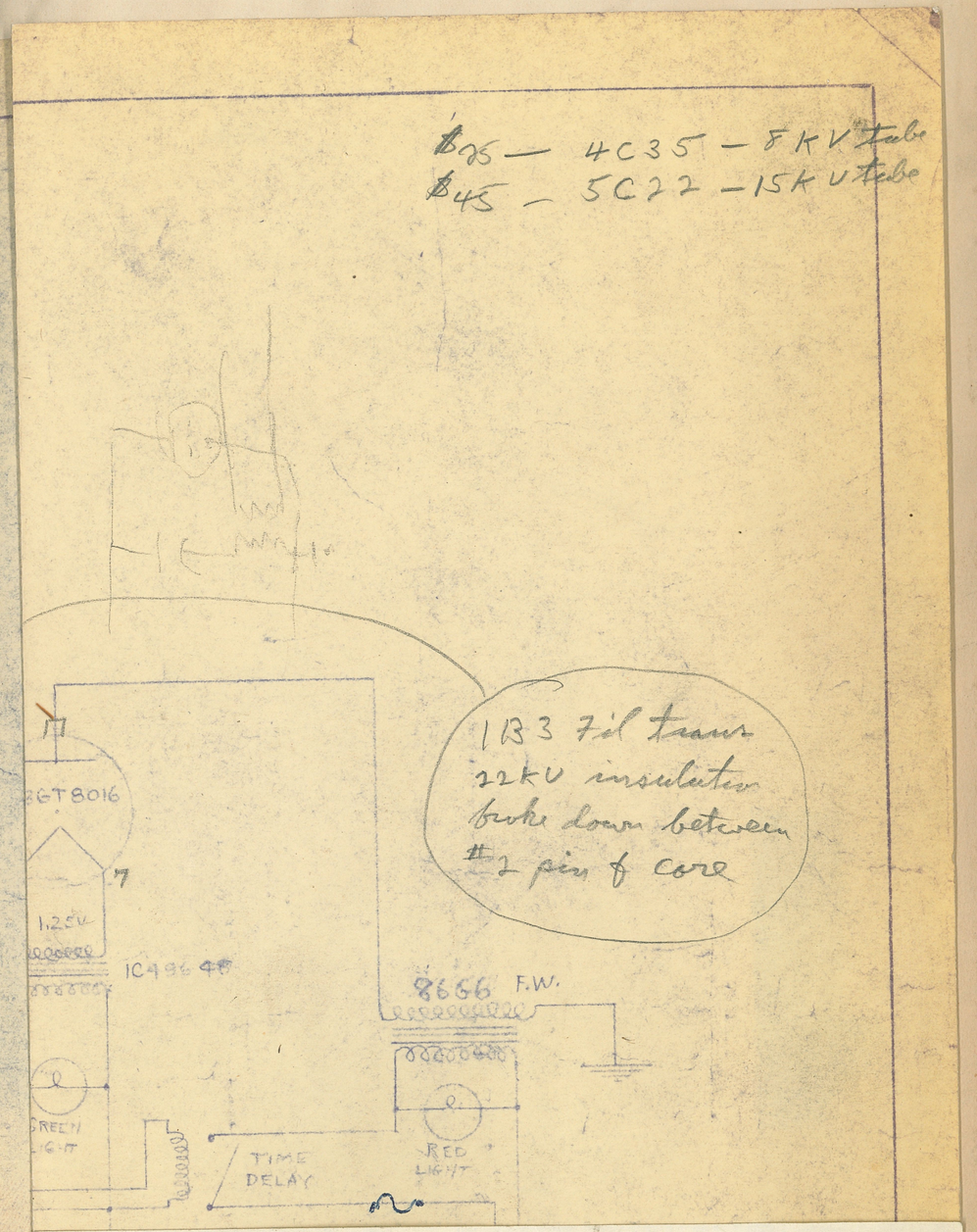
The five capacitors in the trip surge generator are charged to 12.5 KV. The sphere gaps are adjusted to hold perhaps 15 or 20 KV so that they will not spark over spontaneously. The thyratron is supplied with -50 volts bias thru the coaxial cable from the HC-25 oscillograph. The oscillograph also supplies a positive pulse for firing the thyratron. This pulse is produced by the oscillograph sweep circuit at the proper instant to start the surge at some

convenient point on the screen. Firing the thyratron is the equivalent of closing a switch so that the terminal of the capacitor in the trip surge generator which is connected to the thyratron plate is suddenly lowered to ground potential. This causes its other terminal to rise the same amount thereby doubling the voltage across the first gap. As this gap sparks over the voltage on the next one is tripled and therefore it also is forced to spark over. As the remaining gaps spark over the capacitors are connected in series thru the sparks thereby adding up their voltages to give 62 KV at the top terminal.

This 62 KV pulse is applied to the three electrode trip gap of the large surge generator thru some resistance of about 50,000 or 100,000 ohms. This resistor is furnished by the surge generator builder and is necessary to limit the amount of power which can be discharged back into the trip surge generator.

The sharp pointed wire pointed at one of the spheres of the lowest gap is for producing a little corona. This corona ionizes the air in the gap so that any tendency for delay in sparking over is eliminated. The point should be set about 3/4" or so from the sphere so that the corona is visible but not enough to cause sparkover from the point.

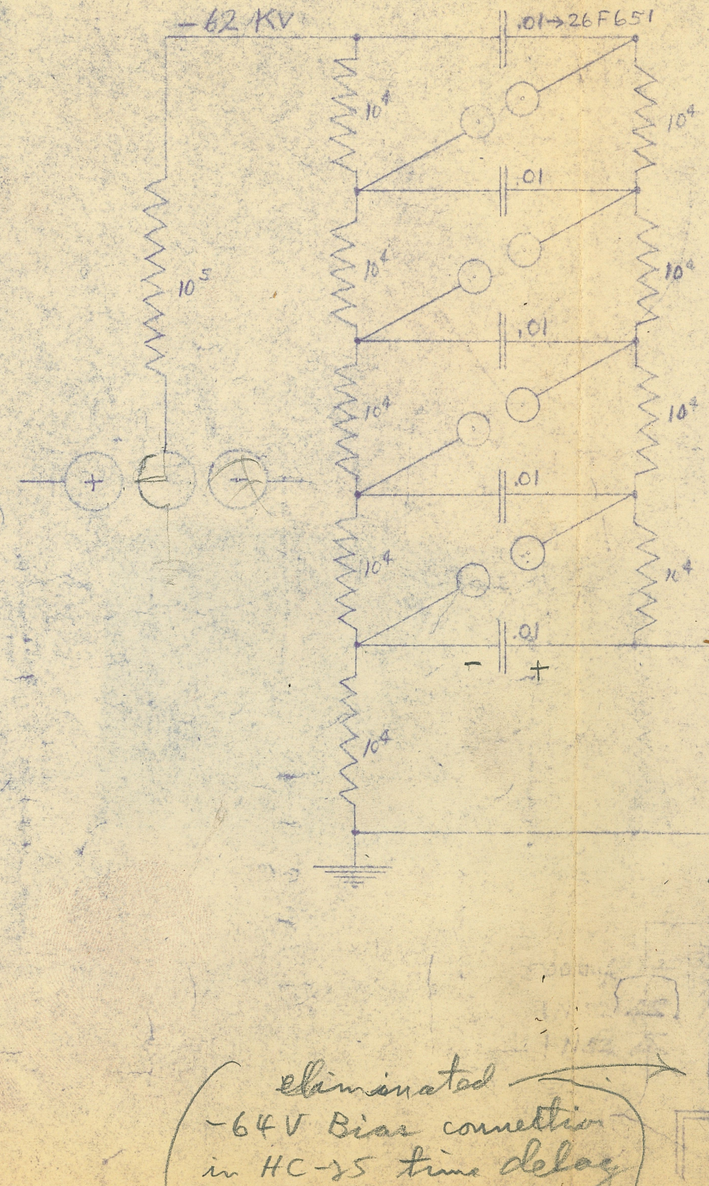
Ø25 — 4C35 — 5KV tube
Ø45 — 5C22 — 15KV tube



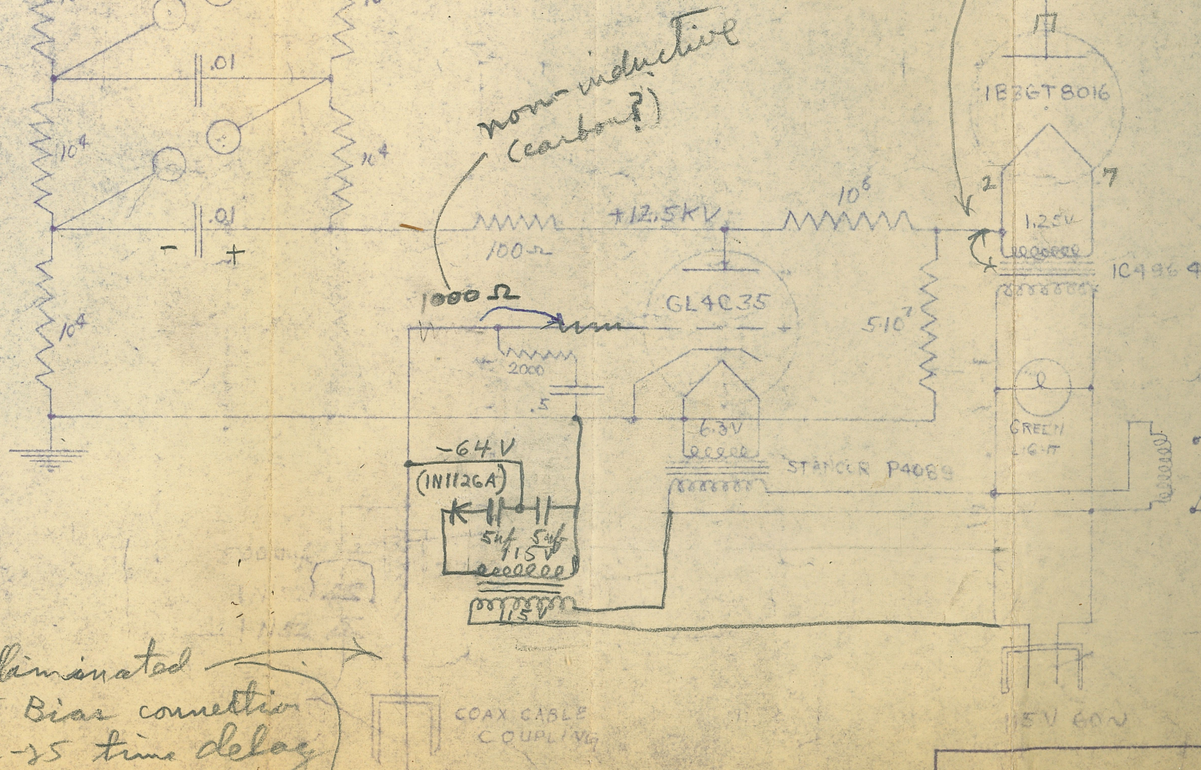
M-5112535

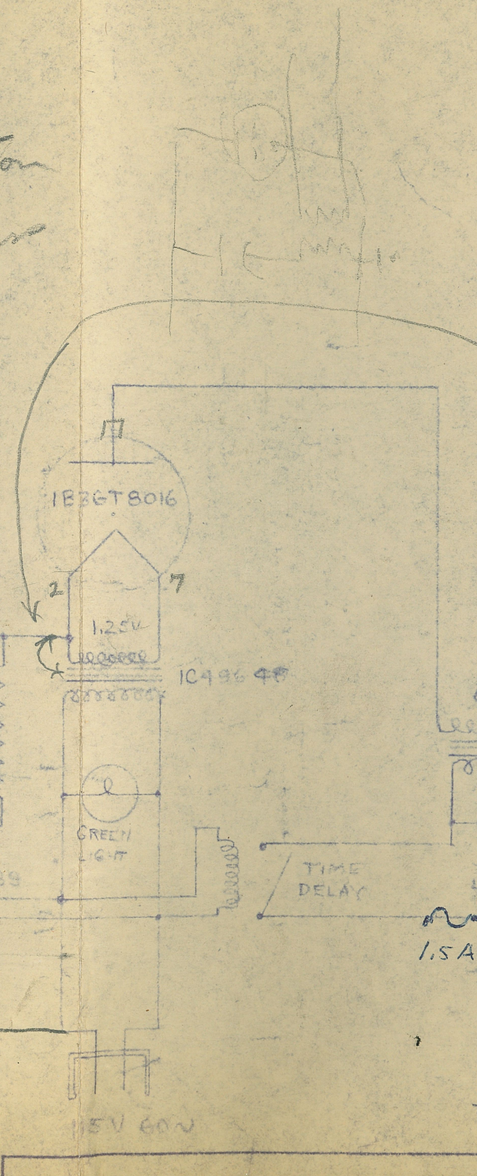
THIRD ANGLE PROJECTION

Ø25 — 4C35 — 5KV Tube
Ø45 — 5C22 — 15KV tube

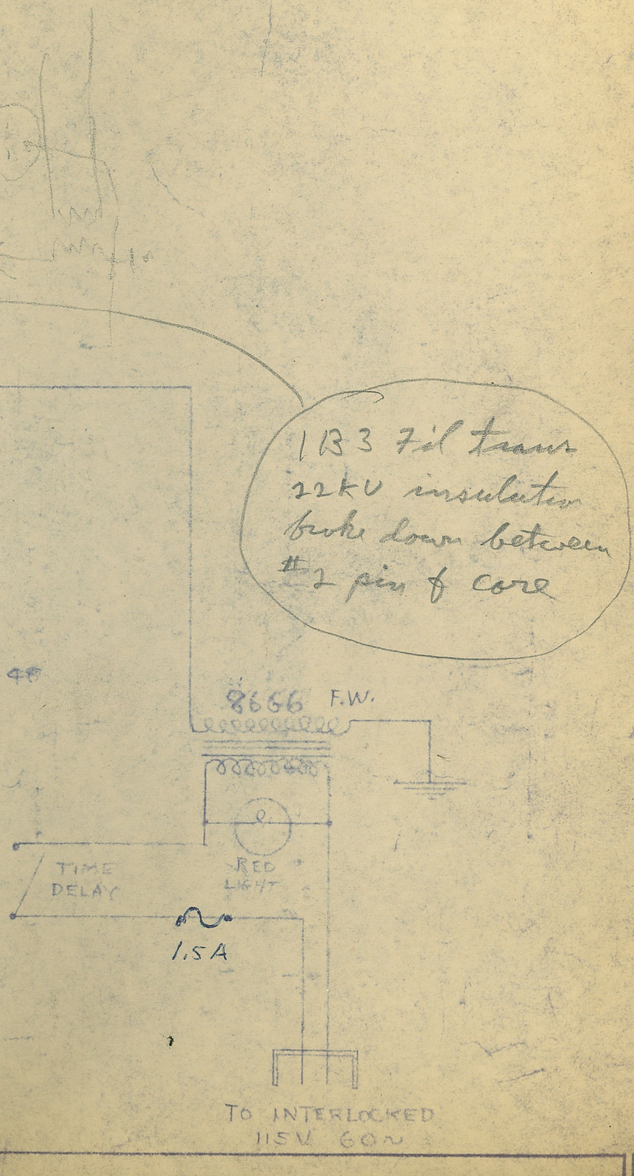


1. check grds
2. check grd. button on CRO Tube for looseness
3.





1B3 fil trans 22KV insulation broke down between #2 pin & core



Eliminated -64V Bias connection in HC-25 time delay circuit
6/10/70
WB.

TRIP SURGE GENERATOR
ELEMENTARY DIAGRAM

FIRST MADE FOR HC-25-A2 CATHODE RAY OSCILLOGRAPH

BEGUN BY [illegible] April 15-47 | TRACED BY
FINISHED BY | INDEXED

Supersedes MM25-0 LM-8572
Date SEPT 1948 LM-9767

B45 – 5C22 – 15kV

-62 KV

.01→26F651

10^4 10^5 .01

1. check grds
2. check grd. button on CRO Tube for looseness
3.

non-inductive (carbon?)

+12.5KV

100Ω 1000Ω 10^6 $5\cdot10^7$

GL4C35

2000 .5 6.3V

-64V (IN1126A) 5μf 5μf 15V 15V

STANCOR P4089

1B3GT8016 2 7 1.25V

1C4964

GREEN LIGHT

TIME DELAY

RED LIGHT

1.5A

8666 F.W.

1B3 fil trans 22kV insulation broke down between #2 pin & core

COAX CABLE COUPLING

115V 60~

TO INTERLOCKED 115V 60~

eliminated -64V Bias connection in HC-25 time delay circuit

6/10/70 WJB

1 Made to DWG 22	LM-7434	
2 Revised to MATCH	LM-8572	
3 Revised to SCHEM	LM-9767	

TRIP SURGE GENERATOR
ELEMENTARY DIAGRAM

FIRST MADE FOR HC-25-A2 CATHODE RAY OSCILLOGRAPH

BEGUN BY A. Robota Apr 15-47 TRACED BY

FINISHED BY A. Robota Apr 15-47 INSPECTED [illegible] Apr 6 47

GENERAL ELECTRIC SCHENECTADY WORKS

M-5112535

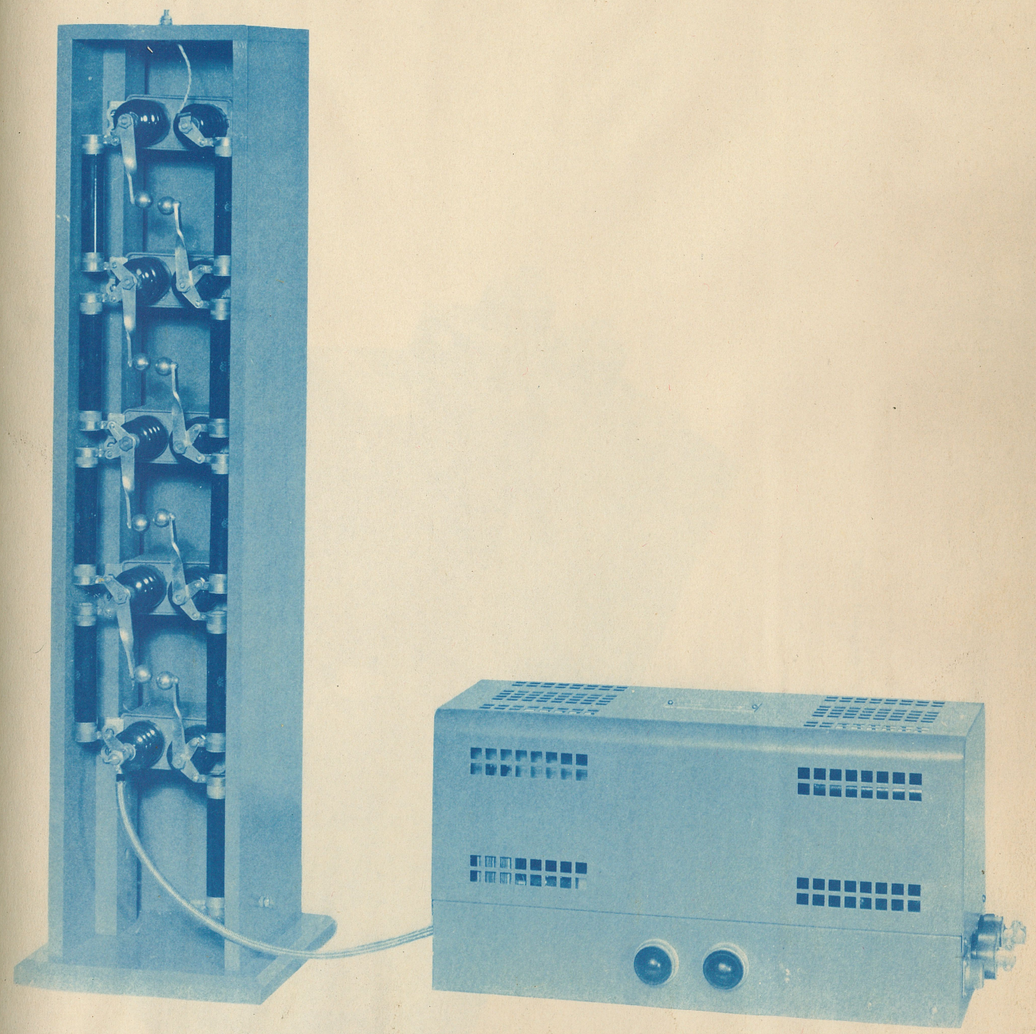
GL

SKETCH

PRINTED IN U.S.A.

FF-114 (12-40)

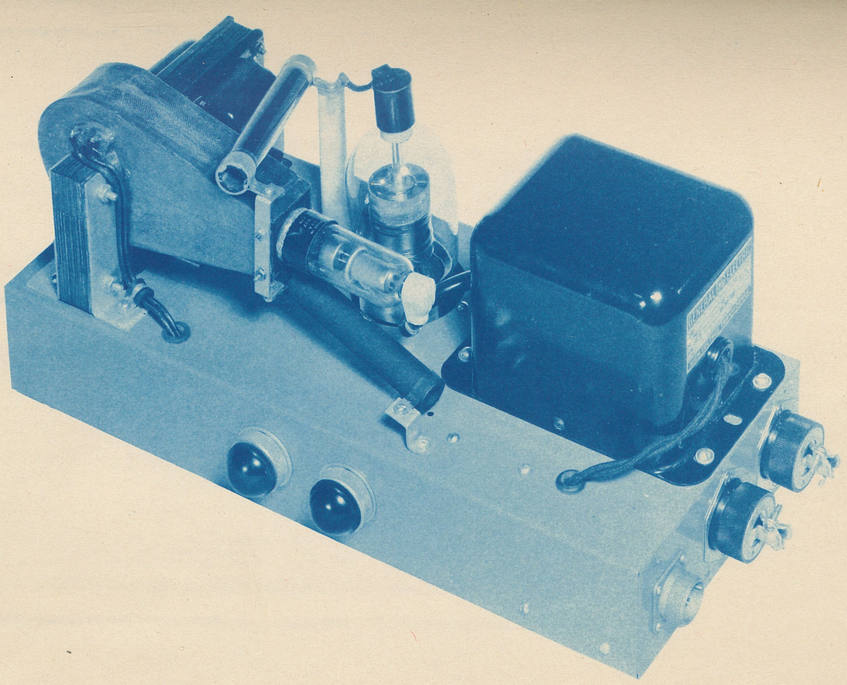
GL2 R PRINTS TO



1054 619 TRIP-CIRCUIT UNIT AND TRIP-SURGE GENERATOR, CAT.9159534G1.

537.4 E369.9

6-2-48



1054 620 TRIP-CIRCUIT UNIT, CAT.9159535G1, WITHOUT CASE.

537.4 E369.9

6-2-18